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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,777	11/08/2001	John L. Galvagni	AVX-122	9869

7590

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EXAMINER

LEWIS, MONICA

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 08/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/006,777

Applicant(s)

GALVAGNI, JOHN L.

Examiner

Monica Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 19 May 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### DETAILED ACTION

1. This action is in response to the amendment filed May 19, 2002.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 25 is rejected under 35 U.S.C. 102(b) as being anticipated by Takagi et al. (U.S. Patent No. 4,800,459).

In regards to claim 25, Takagi et al. ("Takagi") discloses the following:

a) a plurality of first device layers, each such layer having a first series of resistive/conductive patterns thereon and a plurality of via drilled therethrough (For Example: See Figure 1);

b) a plurality of second device layers, each such layer having a plurality of via drilled therethrough (For Example: See Figure 1);

c) a unitary device body formed by the bonded union of an interleaved stack of said plurality of first and said second device layers (10), wherein each of said via correspond to a respective portion of the resistive/conductive patterns on the underlying device layer and wherein one of said second device layers forms the uppermost device layer and the lowermost device layer is one of said first device layers (For Example: See Figure 1);

d) a second series of resistive/conductive patterns on an outer layer of said uppermost device layer (For Example: See Figure 1);

e) a plurality of terminations on said unitary body for electrical connection between other electronic devices and various of the resistive/conductive patterns throughout said unitary device body (For Example: See Figure 1);

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f) individual passive components (26, 27 and 28) with respective first and second opposing terminations, wherein each individual passive component is vertically mounted into a selected of said plurality of via and wherein one of said first and second opposing terminations are electrically connected to a portion of said underlying first device layer's series of resistive/conductive patterns (For Example: See Figure 1);

g) multiple portions of a non-conductive material respectively substantially filling the space between each of said individual passive components and the surrounding via, wherein said non-conductive material partially encases each said individual passive component to hold it in place while leaving one of said first and second opposing electrical terminations exposed and prevents one of said first and second opposing electrical terminations exposed and prevents shorting between respective first and second opposing electrical terminations (For Example: See Figure 1); and

g) an electrical connection between each of said passive components and at least a portion of said overlying first device layer's first series of resistive/conductive patterns through a corresponding one of said first device layer's plurality of via (See Figure 1).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 19 and 22-24 are rejected under 35 U.S.C. 103(a) as obvious over Takagi et al. (U.S. Patent No. 4,800,459) in view of Aday-Amoakoh et al. (U.S. Publication No. 2002/0145203).

In regards to claim 19, Takagi discloses the following:

a) a first device layer with a first series of resistive /conductive patterns thereon (For Example: See Figure 1);

b) a second device layer with a plurality of via drilled therethrough (For Example: See Figure 1);

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c) a unitary device body formed by the bonded union of the first and second device layers (For Example: See Figure 1);

d) a second series of resistive/conductive patterns on an outer layer of said unitary body (For Example: See Figure 1);

e) a plurality of terminations on said unitary body for electrical connection between other electronic devices and components of said device (For Example: See Figure 1);

f) individual passive components with first and second opposing electrical terminations, wherein each said individual passive component is vertically mounted into a selected of said plurality of via and wherein one of said first and second opposing electrical terminations (For Example: See Figure 1);

g) multiple portions of a non-conductive material respectively substantially filling the space between each of said individual passive components and the surrounding via, wherein said non-conductive material partially encases each said individual passive component to hold it in place while leaving one of said first and second opposing electrical terminations exposed and prevents shorting between respective first and second opposing electrical terminations (For Example: See Figure 1); and

h) an electrical connection between each of said passive components and at least a portion of said second series of resistive/conductive patterns on said outer surface of said unitary device body (For Example: See Figure 1).

In regards to claim 19, Takagi fails to disclose the following:

a) a capture pad.

However, Adae-Amoakoh et al. ("Adae") discloses the use of capture pads (For Example: Paragraph 29). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use of capture pads as disclosed in Adae because it aids in the providing an electrical connection among various components (For Example: See Paragraph 29).

Additionally, since Takagi and Adae are both from the same field of endeavor, the purpose disclosed by Adae would have been recognized in the pertinent art of Takagi.

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In regards to claim 22, Takagi discloses the following:

a) first and second layers are made of a non-conductive ceramic (For Example: See Column 2 Lines 60-62).

In regards to claim 23, Takagi discloses the following:

a) device is an integrated passive component (For Example: See Figure 1).

In regards to claim 24, Takagi discloses the following:

a) passive components comprise any combination of resistors, capacitors, varistors, and thermistors (For Example: See Column 5 Lines 34 and 35).

6. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as obvious over Takagi et al. (U.S. Patent No. 4,800,459) in view of Adae-Amoakoh et al. (U.S. Publication No. 2002/0145203) and Fan et al. (U.S. Patent No. 6,471,525).

In regards to claim 20, Takagi fails to disclose the following:

a) first and second layers are made of FR4.

However, Fan et al. ("Fan") discloses the use of FR4 (For Example: See Column 2 Lines 12-14). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use of FR4 as disclosed in Fan because it aids in the providing a coefficient of thermal expansion that matches surrounding structures (For Example: See Column 2 Lines 12-14).

Additionally, since Takagi and Fan are both from the same field of endeavor, the purpose disclosed by Fan would have been recognized in the pertinent art of Takagi.

In regards to claim 21, Takagi discloses the following:

a) device is a printed circuit board (For Example: See Figure 1 and Column 2 Lines 52-62).

***Response to Arguments***

7. Applicant's arguments filed May 19, 2003 have been fully considered but they are not persuasive. Applicant argues that "Takagi et al. does not discloses such additional non-conductive material partially encompassing each passive component." However, "multiple portions of a non-conductive material respectively substantially filling the space between each of said individual passive components and the surrounding via, wherein said non-conductive material partially encases each said individual passive component" are disclosed in Takagi (For Example: See Figure 1). Ceramic is utilized as the non-conductive material and it substantially fills the space between the passive components and the surrounding via. Additionally, it partially encases the passive component.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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9. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure: a) Chi et al. (U.S. Patent No. 6,486,529) discloses a vertical capacitor; and b) Hayashi et al. (U.S. Publication No. 2002/0033378) discloses a printed wiring substrate.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

August 7, 2003



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